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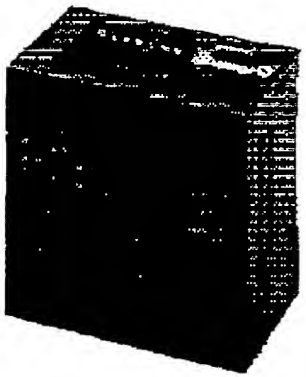
AS-i Wizard New!

AS-i for opportunities in lowest levels of automation

- AS-i = Actuator Sensory-interface
- AS-i systems consist of a master(CP243-2) and slave nodes that transmit simple binary signals to the master
- A dominant competitor in binary networks is Allen-Bradley's DeviceNet



AS-i CP 243-2 (Master)

AS-i Slave

AS-i Network Cable

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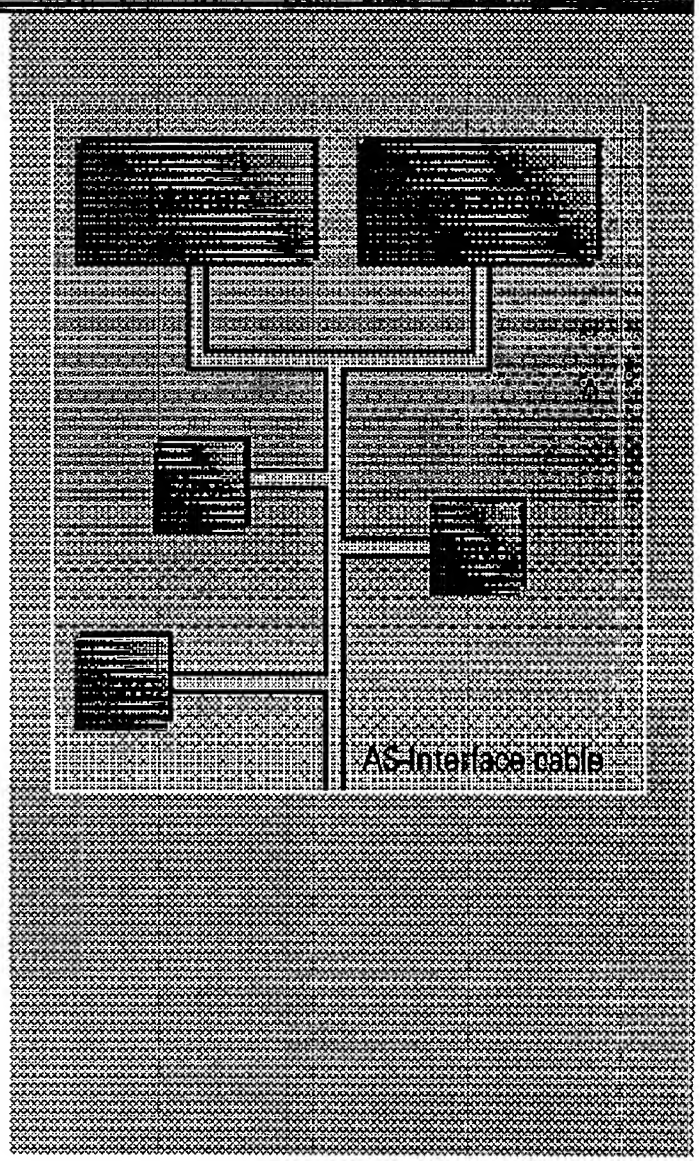
Minimum configuration of an AS-i Network:

- One Master (CP243-2)
- Power Supply
- Slave(s)

- One control module (master) in the AS-Interface network which polls the data of the other nodes (slaves) at precisely defined intervals.
- Simple two-wire cables without shielding or PE conductor are used to carry both data and the auxiliary power for the sensors simultaneously.



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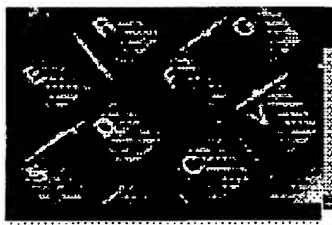

AS-i Wizard

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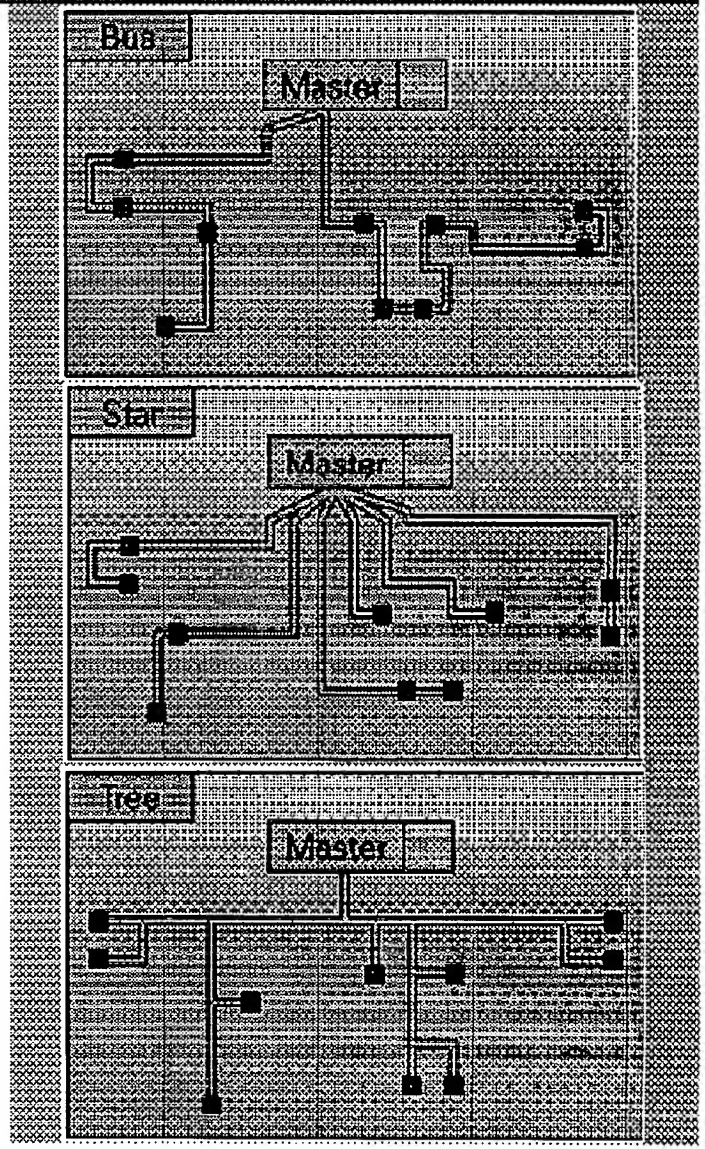
Bus, Star, or Tree Network Configurations are possible

- The AS-Interface functions without any problem with standard components up to a length of 500 m – without repeaters or extenders up to 100 meters.
- Consult the AS-i documentation for additional details on network configurations, use of repeaters, etc.



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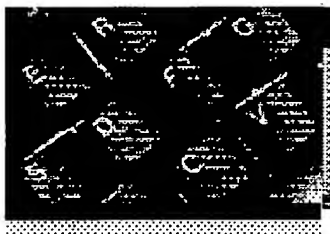

AS-i Wizard New!

AS-i Wizard

Without an AS-i wizard

- For S7-200 to work with AS-i, PLC programming for CP243-2 is required
- Programmer's logic must build and maintain an image register
- PLC logic to coordinate reads & writes from CP to PLC
- Tedious and error-prone
- Required to know PLC details and AS-i CP details

Advantages of AS-i wizard

- Wizard screens guide customer by asking for needed parameters
- When wizard finishes:
  - AS-i Sub-routine instructions are created based on wizard settings
  - AS-i Symbol tables are created
- Compares & updates configurations (online)
- Focus on utilizing the AS-i data, not debugging PLC logic
- Much easier - Reduces amount of programming complexity and time
- Reduces amount of technical expertise needed

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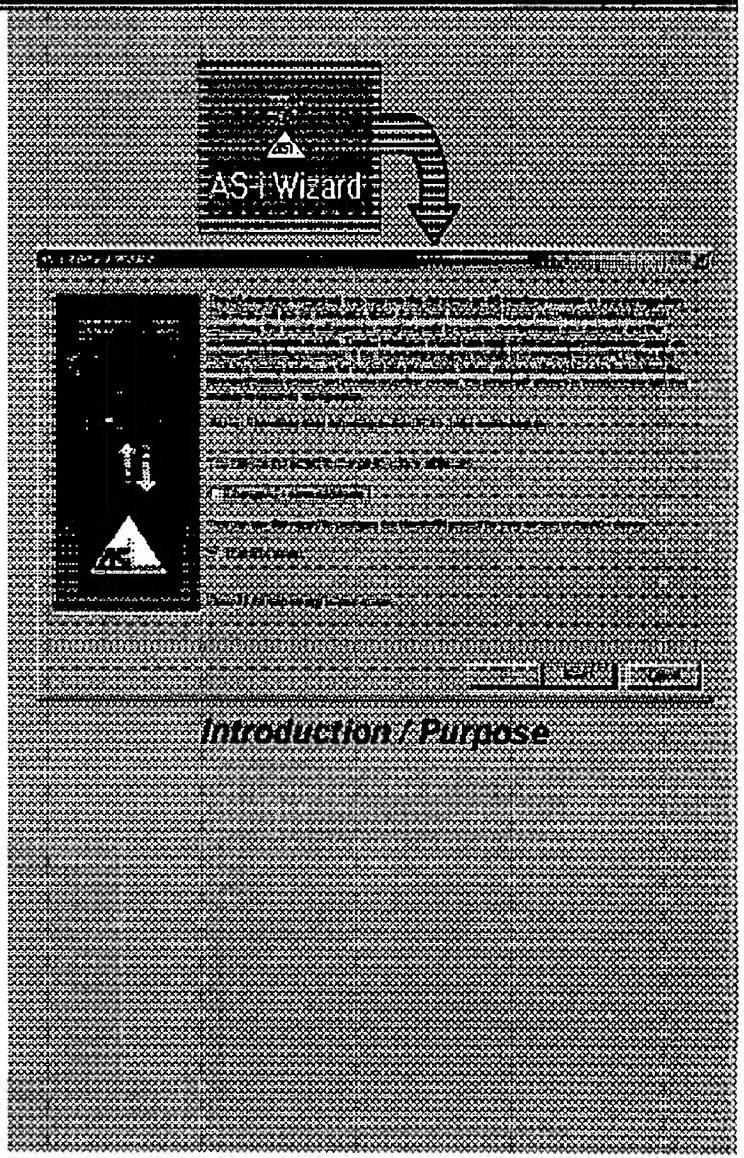
AS-i Wizard New !

AS-i Wizard

Configuring an AS-i Network

- Access the wizard by clicking 'Tools' on the navigation bar, then clicking the AS-i icon.
- Consistent with other Intelligent module wizards (Context-sensitive help, etc.)
- The AS-i wizard provides a way to easily set up data transfers between the S7-200 PLC and the AS-i CP243-2 module.
- The AS-i wizard *does not* provide or replace the normal AS-i master configuration.
- When Micro/WIN is connected to an **online** AS-i network, the wizard is able to read and compare slaves on the existing network.



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AS-i Wizard

AS-i Wizard

AS-i Wizard Options

- The wizard introduction screen allows 2 options:
  - Change the address of a known **online** slave.
  - Map a AS-i network to the PLC

To change AS-i Slave address

- A screen is displayed to set up the changes:
- specify module position, current slave address, and new slave address
- Press the 'Change' button.
- After a slave address has been changed (after running the wizard and address is successfully changed),:then the CP243-2 reset button must be pressed (or else reset must be invoked with a hand-held programmer)

Option to change AS-i Slave Address

Screen to set up which AS-i slave address to change

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AS-i Wizard

AS-i Wizard

Module Position Assignment

- Like all wizards, if MicroWIN is connected to online PLC, the EM location can be found and displayed.

Re-reading the configuration

- If an AS-i configuration **already exists** in your project, when you run the AS-i wizard again…**then, on this screen:**
- The wizard detects existing configurations and asks whether you wish to modify an existing configuration or create a new configuration.
- Options will also allow programmer to **delete** or **move** the existing configuration to a different module position.

Module Position Assignment

Edit Existing Configuration: Move/Delete

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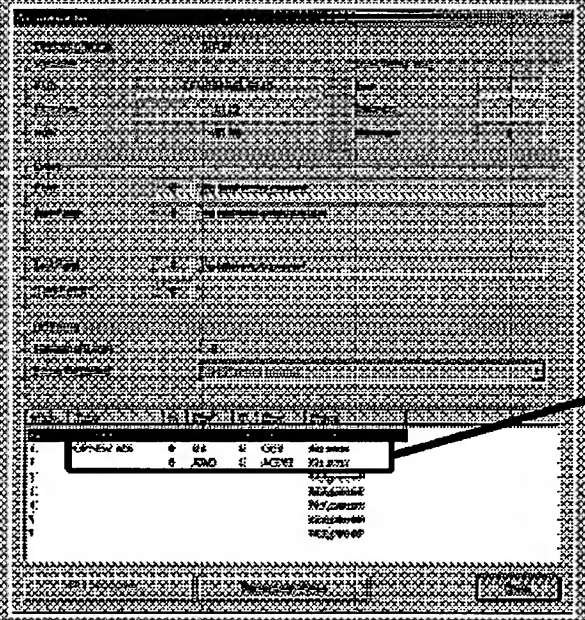

When PLC is attached to an online AS-i network, look in PLC Info dialog: The CP243-2 to PLC mapping is shown.

PLC Memory areas (offsets) to use

The wizard assists the programmer in setting correct CP offsets:

- Settings depend on: **(1)** CPU type and **(2)** AS-i CP module position.
- Offline configurations data can be optionally modified.
- Invalid configuration settings will trigger an error message from the wizard.
- For **online** EM configurations, offsets are automatically fixed and disabled (grayed out).

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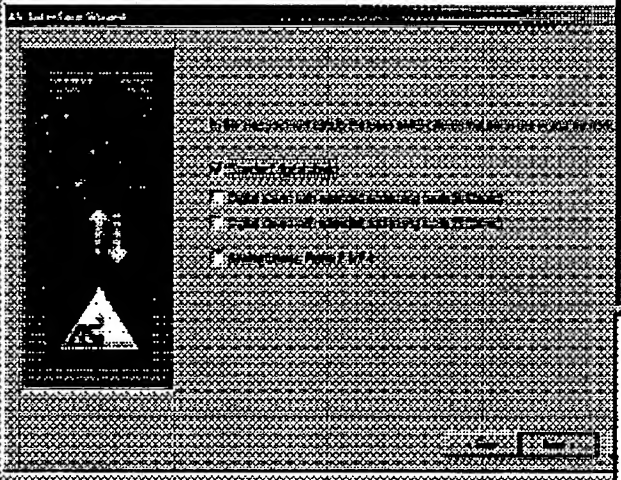
AS-i Wizard New !

AS-i Wizard



Select type(s) of AS-i slaves to configure on your network

31 maximum slaves are allowed for:
- **Standard digital slaves**
- **Digital Slaves w/ Extended Addr. A**
- **Analog Slaves (Profile 7.3/7.4)**

These 3 slave types share the same 31 slave addresses. Therefore, **NO DUPLICATE** addresses are allowed among the 3 types.

31 maximum slaves are allowed for:
- **Digital Slaves w/ Extended Addr. B**

The Ext B slaves **CANNOT OVERLAP** any slave types **except with Digital Extended A type.**

The purpose of Extended slaves (A&B) is to allow a **maximum of 62 slave nodes** on one network.

Select the type of AS-i slaves on your network

- Different slave types have unique ID codes embedded in the data frames.
- Subsequent wizard screens depend on selections made on this screen.
- For **online** EM configurations, module types are automatically set, and the checkboxes are grayed out (disabled).

Overlapped AS-i slave addresses

- For instance, there cannot be a Standard Digital Slave #2 & Analog Slave #2.
- When a slave address is already used, then the slave address column is grayed out (unavailable) to slaves in other charts. -See the following slides.

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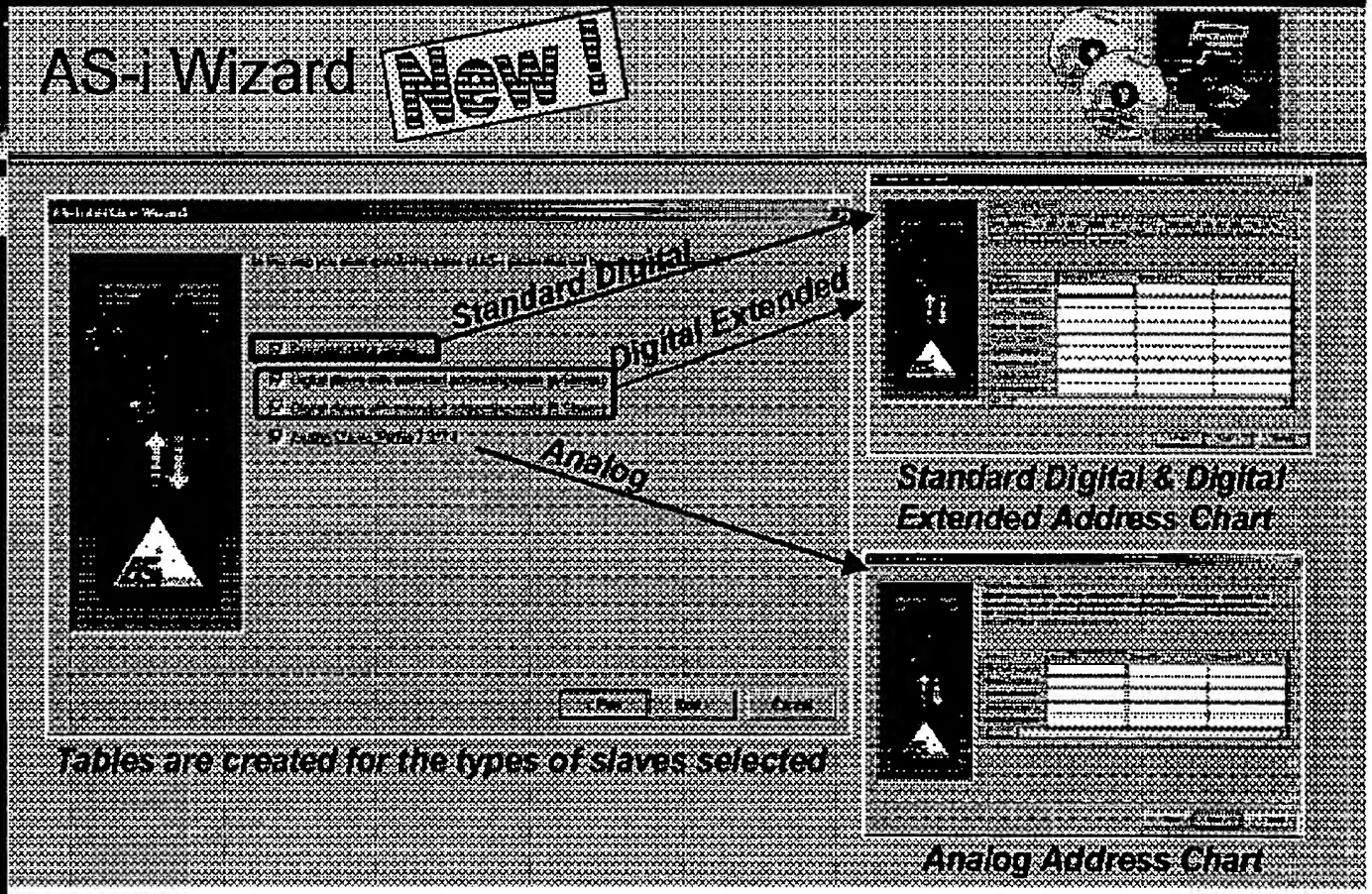
AS-i Wizard

AS-i Wizard NEW!



Organization of the AS-i slave types in the charts

- All of the selected digital slave types appear in one Digital chart.
- When **both** Standard Digital & Digital Ext.Address A types are selected, they both occupy the same chart columns. Example: **#1 / #1A**
- Digital Ext.Address B types follow any Standard Digital/Ext. A slaves in the digital chart. Example: **#1 - #31** followed by **#1B – #31B**

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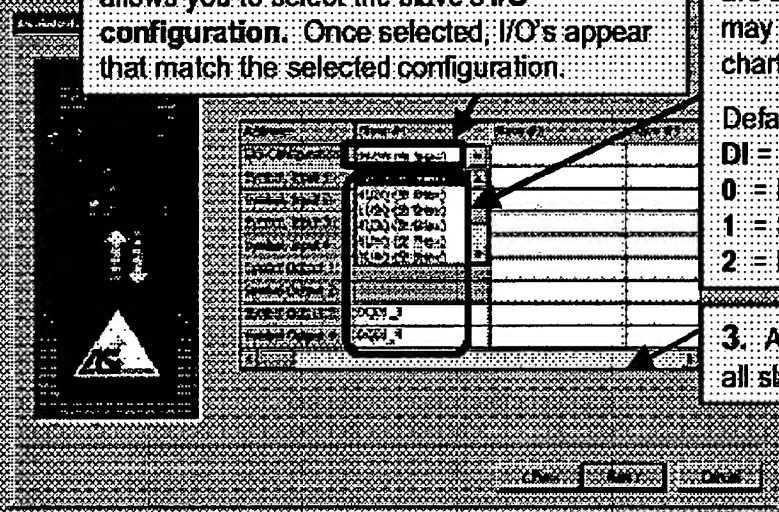
AS-i Wizard NEW !

1. Click top row for a drop-down list-box that allows you to select the slave's **I/O configuration.** Once selected, I/O's appear that match the selected configuration.

2. Symbols for individual slave I/O are assigned default symbols. You may modify the symbols in the chart.

Default Symbol Example: **DI01_2**
DI = Digital Input,
0 = Module Position (Slot) **0**,
1 = Slave Address **1**,
2 = Input **2**

3. A **scroll bar** is used to access all slave addresses



How a chart works.

Setting up the slave data in the chart(s)

- After finishing the wizard, the slave I/O symbols appear in a symbol table.
- These symbols are for later use in the PLC program logic.
- The symbol table is re-generated when the wizard is re-run (each time 'Finish' button is pressed) for the same AS-i CP243-2 network configuration.

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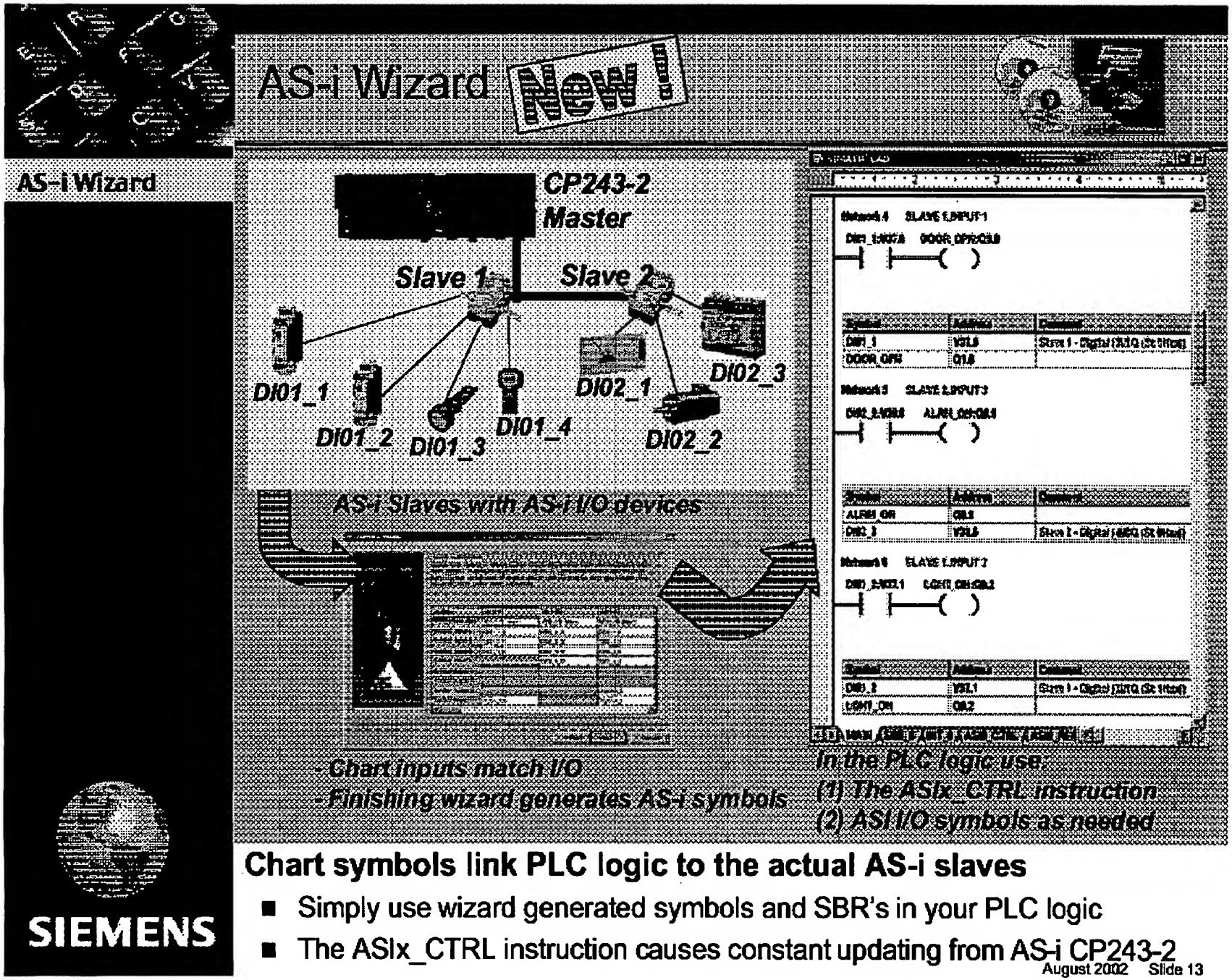
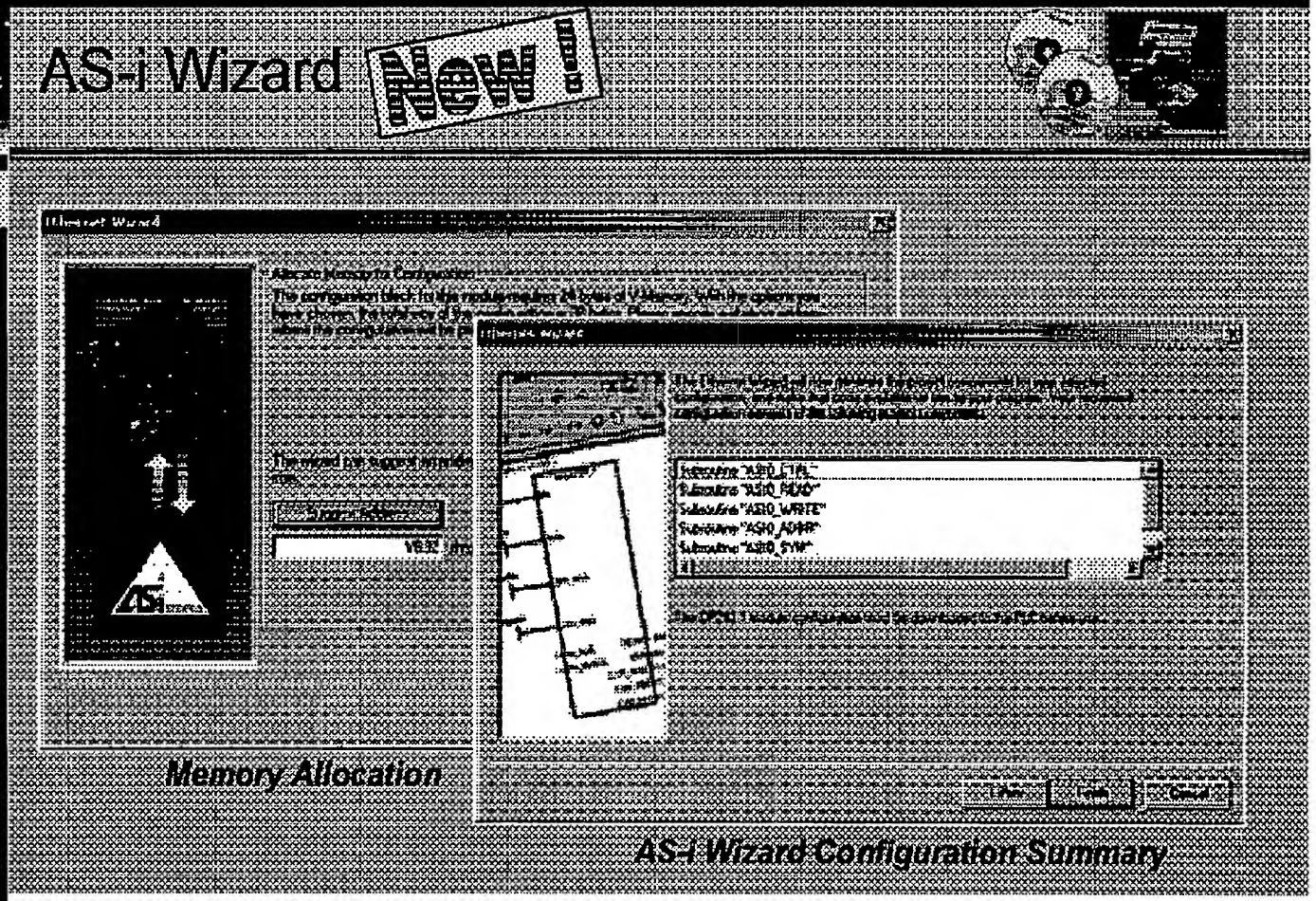


Chart symbols link PLC logic to the actual AS-i slaves

- Simply use wizard generated symbols and SBR's in your PLC logic
- The ASIx_CTRL instruction causes constant updating from AS-i CP243-2

AS-i Wizard

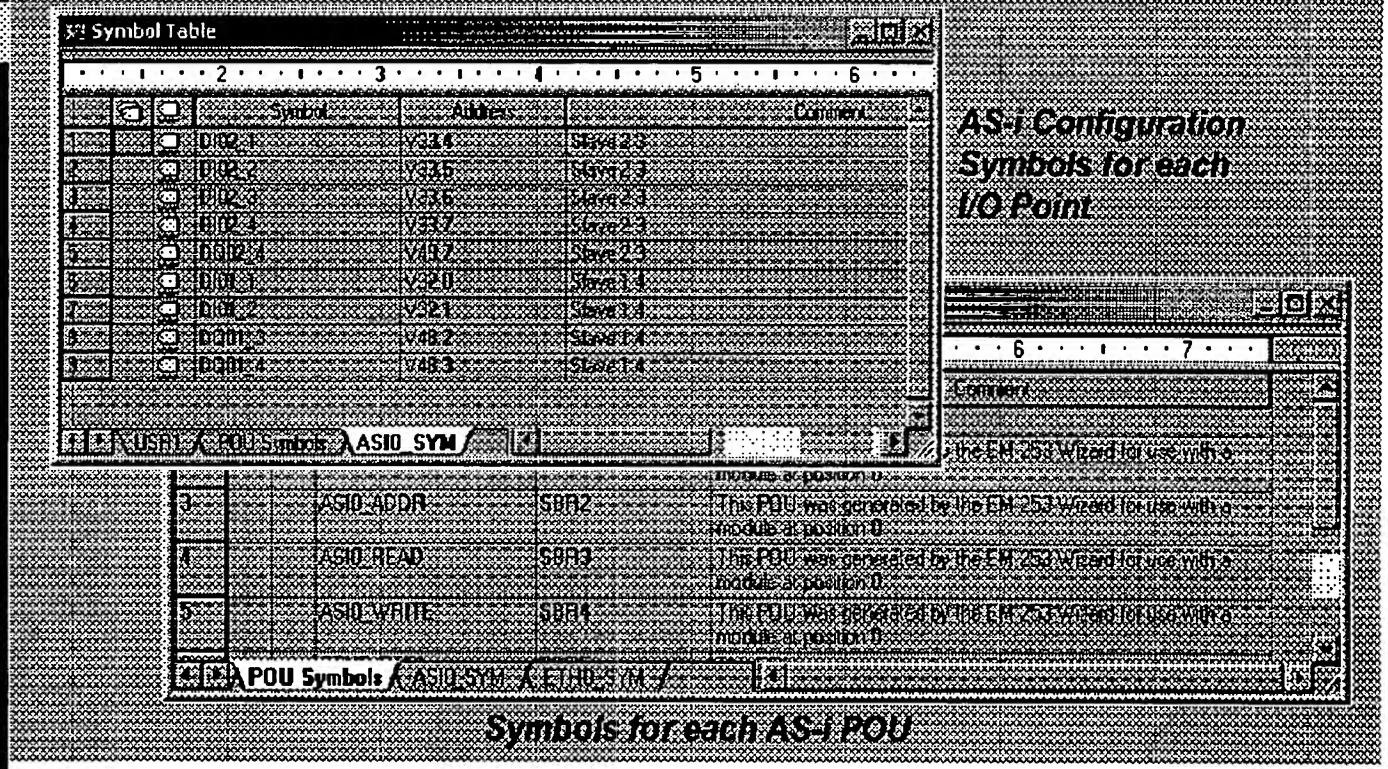


Final Wizard Screens

- Memory Allocation screen suggests available project space.
- The summary screen shows all project additions (SRB's, DB, Symbols).
- The summary screen gives advice about how to use the new additions.

AS-i Wizard

AS-i Wizard New!



Project is Appended By the Wizard (when 'Finish' is pressed)

- Creates a symbol table of I/O points for all the configured AS-i slaves.
- Adds the new AS-i POU's (SBR's) to the System POU Symbol table
- Use symbols from the AS-i symbol table in creating the PLC program logic
- Using the wizard (re-running the entire wizard) to change an existing configuration causes the AS-i symbol table to be re-generated (overwritten).

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AS-i Wizard New!

AS-i Wizard

Instructions Added to Tree

- New AS-i subroutines are added to the project's instruction tree
- **ASIx_CTRL** Instruction is used to copy slave data between the AS-i CP module and the PLC (*to be called every scan*).
- The read and write instructions are **for AS-i experts**: *they require you to know the bank number of the data**
- **ASIx_READ** Instruction is used to read bank data from the CP module (from CP to V memory).
- **ASIx_WRITE** Instruction is used to write bank data to the CP (from V memory to CP)

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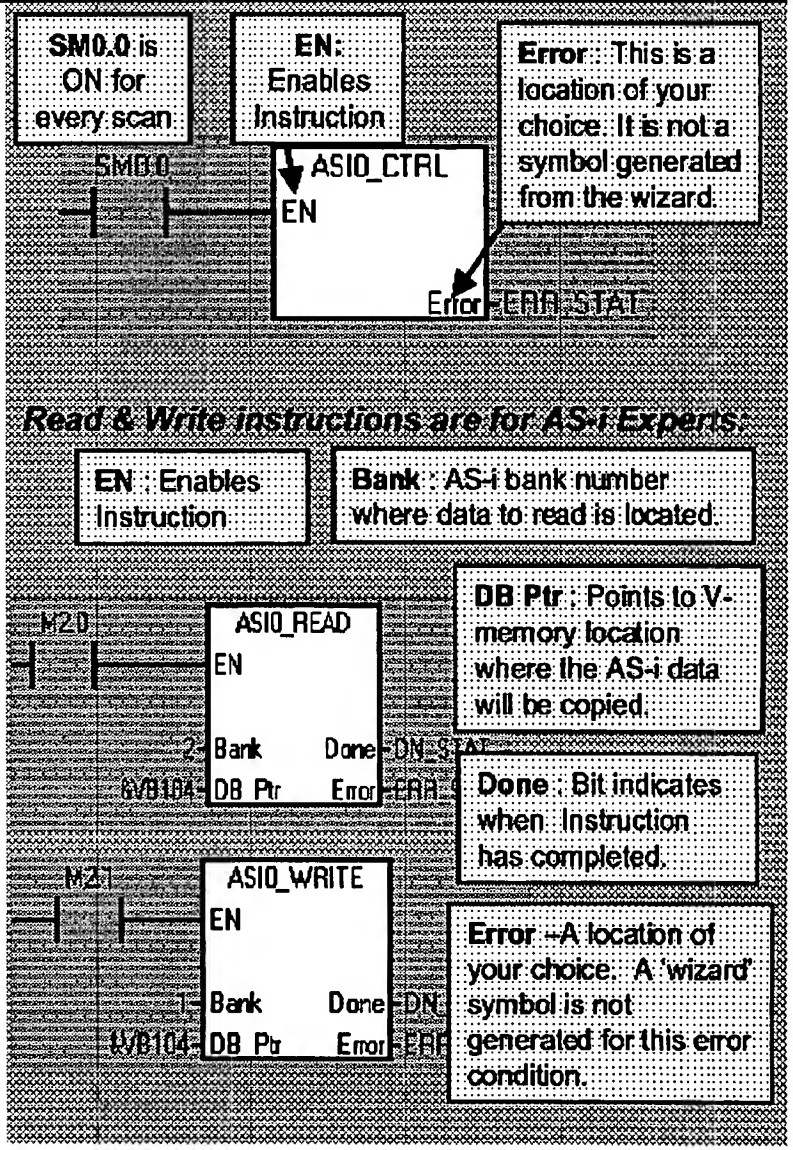
* Find details about AS-i in the CP243-2 AS-i manual.



AS-i Wizard
AS-i Wizard
Compares the Offline& Online Configuration
Option to compare an online PLC configuration with the offline Micro/WIN wizard configuration
After comparing, the Micro/WIN configuration can be updated to match the online configuration
Selecting 'Update' will:
Add missing slaves to your configuration.
Replace (write over) any offline slaves that exist with the same address(es).
Compares Offline to Online / Updates
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AS-i Wizard New!

Without an AS-i wizard

- Configuring S7200-to-AS-i interfaces requires complex AS-i knowledge including program of the control/status bits, handling image registers, etc.

With an AS-i wizard

- Even beginning programmers can configure AS-i connections
- Reduces time for interfacing to an AS-i network setup
- Reduces time for modifying slaves (re-run wizard, online compare, change slave address)
- Wizard generated instructions and symbols are makes programming with the AS-i data very simple and straightforward

Summary

- Expands customers' usability with AS-i
- Increases S7-200 PLC capabilities in low-end a
- Allows opportunities in more application areas

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